

On the necessity of a Reform in the Generic Nomenclature of Diurnal Lepidoptera, illustrated by a Review of the Genera proposed from the time of Linnæus to the year 1816. By W. F. KIRBY, Assistant in the Museum of the Royal Dublin Society, and Member of the Entomological Society of London, &c. (Communicated by H. T. STANTON, Esq., Sec. L.S.)

[Read December 16, 1869.]

THE rules regulating specific nomenclature are tolerably well understood and acted upon; but, on account of the unstable nature of genera, and the want of uniformity in the practice of authors respecting them, indescribable confusion has arisen in generic nomenclature. It is scarcely too much to say that no recognized rules on the subject exist at all, and that the attempt to apply any rules, even of the most obvious fairness, would result in the subversion of the names of very large numbers of typical groups. At least this is the case in Entomology, and doubtless in other branches of natural history also.

It is a convenient practice to take the first species of a genus as the type, when no satisfactory reason can be shown to the contrary; and, on December 7, 1868, I communicated a paper to the Entomological Society of London, embodying the propositions cited below, which, for the sake of argument, I pushed in illustration to their utmost extent.

1. The first species, or first section of a genus, is, in absence of satisfactory evidence to the contrary, to be considered typical.

2. The founder of a genus alone has the right to restrict the name to any portion of it except the first.

3. If a species be figured, it is, as a rule, to be considered the type, although it may not be the first on the list.

The alterations that the too stringent application of these rules would cause in nomenclature were so serious, that the Entomological Society gave it as its verdict:—that the first section or species of a genus was not necessarily the type; that a retrospective application of any such rule was out of the question; and that an author in subdividing a genus is at liberty to apply the old name to any section, but is bound to retain it for some portion of the original genus. There was, however, a difference of opinion on this point,—some arguing that, when a genus is subdivided, the sections ought to receive new names;

and others, that when two genera are combined, a new name should be employed instead of either of the old names. Mr. Dunning subsequently argued, with some show of reason, that in a linear arrangement the middle of a genus ought to be considered the most typical; but it may be replied that it is a common custom to place the most typical species (*i. e.* those most divergent in one particular direction) at the head of their genus.

So many uncharacterized and badly defined genera have been adopted in Entomology, that we cannot in fairness overlook any. A mere catalogue name, if any species belonging to it are indicated, and much more a species figured with a new generic name, would be entitled to consideration. Thus Gray has indicated a new genus under the name of *Mesapia* for *Pieris pectoria* of Hewitson, which he regards as the type of an aberrant genus of Papilioninæ. To reject a manuscript genus when the type is well known, for no other reason than because it has not been described, appears quite unnecessary. A manuscript genus is on a totally different footing to a manuscript species. The only genera which can be justifiably passed over altogether are those which contain utterly discordant species—and not even these if the name has subsequently been retained for any of them.

As the second proposition could not be maintained, I adopted the following new set of rules:—

1. Any sufficient evidence of the type of a genus is binding on subsequent authors.

2. Where no such evidence exists, an author is at liberty to restrict the name of a genus or subdivision to any section he pleases.

3. But the name of a genus may not be applied to any group which does not contain at least one species placed in it by the original describer.

4. The original name of every homogeneous genus (if not a synonym or preoccupied) has a right to be retained for some part of it—preferably, where the type does not admit of positive proof, either for the section which answers best to the definition of the genus, for the largest section in it, or, finally, for that section to which the name can most conveniently be applied.

5. When the application of the old generic name is perfectly indifferent, the first species should be retained as the type.

6. When synonymous genera have been described in the same year, the current name should be preferred, on the score of convenience, unless the exact dates can be proved.

But the application of even these rules would cause great confusion, as we shall soon see.

I now propose critically to examine the principal genera of Diurnal Lepidoptera established up to 1816.

The foundation of our modern systems is, of course, the last edition of Linnæus's 'Systema Naturæ,' published in 1767.

The latest Linnean division of the butterflies was as follows:—

Papilio Eques Trojanus.	Papilio Nymphalis gemmatus.
—— — Achivus	—— — phaleratus.
—— Heliconius.	—— Plebeius ruricolus.
—— Danaus candidus.	—— — urbicolus.
—— — festivus.	

I use the singular form instead of the plural here, because Linnæus himself used both; and all the principal Linnean sections, except *Eques* (for which *Papilio* is retained) and *Plebeius*, are still used in the singular as generic names. Fabricius uses the plural only. There is little doubt that Linnæus and his immediate followers regarded *Eques*, *Heliconius*, *Danaus*, *Nymphalis*, and *Plebeius* as ultimate genera; and Esper actually employs several of them almost as generic names. Fabricius, however, apparently treated them merely as sections, as he did not adopt any of them as generic in his 'Systema Glossatorum.'

In 1777 Scopoli published his 'Introductio ad Historiam Naturalem,' in which he divided the Linnean genus *Papilio* into *Argyreus*, *Argus*, *Pterourus*, *Battus*, *Graphium*, and *Ascia*. It is not possible to retain any of these genera. The last, characterized thus, "Alæ absque ocellis, maculis, lineis, punctis et cauda," contains *Cratægi*, *Napi*, *Sinapis*, *Monuste*, and *Phereclus* of Linnæus; but when we find the remaining species of *Pieris* described by Linnæus distributed among *Battus* and *Graphium*, on account of the character of their markings, we cannot retain even *Ascia*, but must agree with Latreille and all subsequent authors in rejecting all Scopoli's genera of butterflies. *Argus* is retained by some authors for the small blue butterflies; but *Papilio argus*, Linn., which is naturally supposed to be Scopoli's type, is placed by him in his genus *Argyreus*, on account of the metallic spots on the under-surface of the wings. The genus *Argus* is thus characterized—"Alæ alicubi ocellatæ, non cau-

data, nec metallo nobili ornatae;" and it will conveniently illustrate the utter worthlessness of Scopoli's genera. Taking the first six species in Scopoli's first section, "simpliciter ocellati," we find they belong to the six following genera—*Morpho*, *Parnassius*, *Tenaris*, *Colias*, *Ypthima*, *Maniola*.

We will now pass on to Fabricius, who published his last work on general entomology, the 'Entomologia Systematica,' in the year 1793. In this work he divides the Linnean genus *Papilio* as follows:—

Papilio Equites Trojani.	Papilio Heliconii.
— — Achivi.	— Parnassii.
— Festivi.	— Danai.
— Nymphales.	— Satyri.
Hesperia (=Plebeii, Linn.).	
Rurales.	Urbicolæ.

If a later author has an indefeasible right to restrict the use of a term, we are bound to retain the name *Danaus* for the modern genus *Pieris*, as Fabricius restricted the term *Danai* to the *Danai candidi* of Linnaeus, separating the *Danai festivi*, which include the types of our modern *Danaidæ*, under the name of *festivi*. But it is not desirable to push a principle to its ultimate limits in such a case as this.

The next important systematic work was Schrank's 'Fauna Boica,' published in 1801. His divisions of the butterflies, with their Linnean and modern equivalents, are given below.

Schrank's genera.	Linnean sections.	Modern genera &c.
I. Erynnis.	Plebeii urbicoli.	Hesperidæ.
II. Pieris.	Various.	Papilionidæ.
A.	Heliconii.	Parnassius.
B.	Equites.	Thais, Papilio.
C.	Danai candidi.	Pieris &c.
D.	Danai candidi.	Colias &c.
III. Maniola.	Nymphales.	Satyrinæ.
A.		Apatura.
B.		
IV. Papilio.	Nymphales.	Limnitis &c.
A.		Vanessa &c.
B.		Argynnis.
C.		Melitæa, Nemeobius.
D.		



Schrank's genera.	Linnean sections.	Modern genera &c.
V. Cupido.	Plebeii rurales.	Lycænidæ.
A.		Coppers*.
B.		Blues.
C.		Hairstreaks.

This admirable system is entirely ignored by all the French authors; but it doubtless ought to form the basis of our nomenclature, in spite of its rejection by Latreille. I will now consider Schrank's genera in detail, on account of their importance.

Genus ERYNNIS.—Contains the following species—*Malvarum*, *Malvæ*, *Tages*, *Comma*, *Linea*, and *Speculum*. Staudinger, without apparent reason, retains the name for *Tages*. It is doubtful, however, whether it might not be better to retain it for *Malvarum*, as *Spilothyrus* is a name in less general use than *Nisoides*, and could not be retained in any case, being a synonym of *Carcharodus* of Hübner, a name of still less common use.

Genus PIERIS.—This name may be retained as in ordinary use, unless it should be rejected in favour of *Danaus*, which is not desirable.

Genus MANIOLA.—The subsequent genera *Hipparchia*, *Satyryrus*, and *Erebia*, are all synonymous with Schrank's first section of *Maniola*. Meigen, almost the only author since Schrank who has employed this name, detaches from the genus Schrank's second section (*Apatura*), and the first species of his first section (*Galathea*). But the characters Schrank gives of his first section of *Maniola* seem to agree best with *Erebia* of modern authors; and I am not aware that the genus to which Boisduval has restricted the name of *Erebia*, Dalm., has any very strong claims to be considered typical. I believe Dalman indicated *Ligea* as his type; but his genus, being in effect synonymous with three of earlier date, can have no very strong claim to be retained.

Genus PAPILIO.—Schrank uses this name for all the *Nymphalinae*, except *Apatura*; but as the name, as now employed, takes in nearly the whole of the *Equites* of Linnaeus, his application of it might reasonably be disputed, even if no serious reasons existed against its being applied to some typical genus of *Nymphalinae*.

Genus CUPIDO.—Least confusion would be created by adopting

\* These names are used as being less likely to confuse than generic names, whose correct application will be discussed in the sequel.

this name for the bulk of the old genus *Thecla*, if the true type of *Thecla* is *Betulæ*, now placed in the genus *Dipsas* of Doubleday and Hewitson. *Dipsas*, including, as it does, *Betulæ* and *Quercus*, would then fall as a synonym of *Thecla*. But the true type of *Cupido* appears to be *Alsus*, and it would be far more convenient and quite justifiable to take *Spini* and not *Betulæ* as the type of *Thecla*.

In 1805 Latreille published volume fourteen of his 'Histoire Naturelle des Crustacés et des Insectes,' dividing the butterflies thus:—

Genus NYMPHALIS, A. NYMPHALES, B. SATYRI.—The *Jason* group, which occupies the foremost place in the genus in all his works, is certainly, as Prof. Westwood argues, the typical section. Felder argues that *Nymphalis* ought not to supersede *Charaxes* of Ochsenheimer; but if Ochsenheimer divided *Nymphalis* into three genera without applying the name to either, it is certainly better to reject Ochsenheimer's name of 1816 rather than Latreille's of 1805. Felder applies the name *Nymphalis* to the second group of species classed under the genus by Latreille in the 'Encyclopédie Méthodique,' *i. e.* the genus *Paphia*, Westw. (nec Fabr.), which, however, it may be remarked, is a preoccupied name.

Genus DANAIDA. (Nom. præocc.) Type, *Plexippus*.—Latreille afterwards changed this name to *Danaus* and *Danaïs*. His reason for making the name feminine (*viz.* that most of the specific names in it are feminine) is unsatisfactory, as this does not apply to his typical group, to which the name is now restricted. However, if the name *Danaus* should be restored to *Pieris*, this genus will be supplanted by *Euplœa*, Fabr., and the genus which now bears that name will take that of *Trepsichrois*, Hübn., as, of three species given as typical of *Euplœa*, Fabr., the two first belong to *Danaïs*, auct., and only the third is a *Euplœa*.

Genus PAPILIO. *Equites* of Linnæus.—Schränk, as we have seen, had already applied this name to the Nymphaliniæ.

Genus PARNASSIUS.—A Fabrician section. But in the event of *Danaus* being substituted for *Pieris*, it is doubtful whether the name *Pieris* ought not to be applied to *Parnassius*, Schränk's first section of his genus, and also the most homogeneous.

Genus PIERIS.—Restricted to sections D and C of Schränk (the modern *Pierinæ*).

Genus *POLYOMMATUS*.—Synonym of *Cupido*, Schrank. As *Corydon* is figured, and the generic name applies very well to the Blues, and not at all to the Hair-streaks, which come first on the list, it seems that *Corydon* ought to be considered the type.

Genus *HESPERIA*.—Synonym of *Erynnis*, Schrank. As the Plebeii Rurales form two-thirds of the Fabrician genus *Hesperia*, and were subsequently indicated by Fabricius himself as typical, it is very doubtful whether we are justified in applying the name to any section of the Plebeii Urbicoli whatever. Latreille's type appears to be *Proteus*.

In 1806 Duméril published his 'Zoologie Analytique,' in which he founded his new genus *Heteropterus*. His type, subsequently indicated, is *Speculum*, Rottemb., which reduces *Cyclopides*, Hübn., and *Steropes*, Boisd., to synonyms of this genus.

In 1807 Illiger published an abstract of Fabricius's final arrangement of the butterflies and sphinges, quoting a few types. I will only mention some of the most important genera not previously noticed.

Genera *CYNTHIA* and *VANESSA*.—Subsequently united by Latreille under the latter name.

Genera *BIBLIS* and *IDEA*.—The practice of changing specific into generic names, which is merely tolerated in other branches of Natural History, has made so little progress in Entomology, that it can easily be suppressed without inconvenience.

Genera *DORITIS* and *PONTIA*.—Now restricted to species not mentioned as typical, but probably included by Fabricius in these genera, both of which are really synonymous with some of older date. But for this doubt, both names ought to be rejected as misapplied.

Genus *MECHANITIS*.—Synonymous with *Heliconius*, Latr. *Polymnia*, to which the name is now restricted, is second in a series of five or six types mentioned, and has no special claim to the name.

Genus *HESPERIA*.—A very heterogeneous genus; but the types are *Lycænida*. It would be most correct to apply the name to *Myrina*, Auct. The type of *Myrina*, Fab., is *Aleides*.

Genus *LYCÆNA*.—Also very heterogeneous. In 1815 Leach restricted the name to the Coppers and Blues. We have seen that the latter are really typical of *Polyommatus*, Latr.; and therefore Stephens and the other English authors are justified in retaining *Lycæna* for the Coppers. Hübner's name *Chrysophanus*, published in 1816, is subsequent to Leach's restriction

of the name *Lycæna* to the Blues and Coppers. There seems no reason for the French authors restricting *Polyommatus* to the Coppers, and *Lycæna* to the Blues.

Genus THYMELE.—The first section corresponds to *Goniurus*, Hübn., the second to *Hesperia*, Westw., and the third is heterogeneous. Stephens restricts *Thymele* to *Malva* and *Tages*; but as these species had previously been placed in new genera by Hübner, and there is no reason why they should be considered typical, it would be better to regard *Goniurus*, Hübn., as the typical section of *Thymele*, or else to abandon the name altogether, which would perhaps be unjustifiable.

In 1809 Latreille published his 'Genera Crustaceorum et Insectorum,' collating his own genera with those of Fabricius and Schrank. Nevertheless, in his 'Considérations Générales sur les Insectes,' published in the following year, he establishes his genus *Satyrus*, synonymous with *Maniola*, Schrank, and *Hipparchia*, Fabr. This name, however, must be taken for *Lasiommata*, West. (section *Amecera*, Butl.), as *Mæra* and *Megæra* are called "le Satyre" by all the old authors, and *Satyrus* was the original specific name applied to the former species in the first edition of Linnaeus's 'Fauna Suecica.' Moreover, Boisduval states ('Species Générale des Lépidoptères,' p. 118) that *Mæra* and *Galathea* were indicated by Latreille in his last manuscripts as his types of *Satyrus*; and the latter species, though not the former, has long been separated from the genus *Satyrus* by all the French authors.

In 1816 Ochsenheimer applied the Fabrician and Latreillian genera to the European Lepidoptera; and Dalman founded several others, mostly synonymous with already existing genera.

In the same year Hübner published a catalogue of described Lepidoptera, attempting a very minute subdivision. But as he relied almost exclusively on facies, his genera are both too numerous and too heterogeneous. His genera are usually treated as manuscript—but unjustly, as I now think, although I formerly expressed a different opinion; for, on closely examining the work, many of his genera will be found to be natural. The practice of taking the names of his genera of *Pieridæ* (*Synchlœ* and *Eurema*, for example), and using them for genera of *Nymphalidæ*, cannot be too strongly condemned. There can be little doubt that the name *Eurema* ought to be restored to the genus *Terias* of Swainson, and that *Synchlœ* ought to be abandoned altogether as a



partial synonym of *Pieris*. It has also happened when one of Hübner's generic names has been borrowed from the 'Verzeichniss,' or taken up from a subsequent figure, that, when the genus has been again subdivided, the species that Hübner himself placed in it has been placed in a new genus, and Hübner's old name applied to insects with which he was unacquainted. But granting that it is not compulsory to adopt a plate-name or catalogue-name for a new genus, it would certainly appear that when this is done, the original application of the name ought to be respected in all subsequent divisions of the genus. It has sometimes happened that the known type of a genus has been subsequently placed in an older one, and the name retained for the remainder. It might be questioned whether, under these circumstances, the name of the genus ought not to be changed; but it scarcely appears necessary—although, if the oldest genus were again subdivided, the second name would have to be restored to the true type. Thus Bates removes the type of Westwood's genus *Megistanis* to Boisduval's genus *Aganisthos*, retaining the name *Megistanis* for species which, although included by Westwood in his genus, were not typical. This may be allowed; but if *Aganisthos* should be again divided, it would be necessary to restore Westwood's name to the true type of his genus.

I have now said enough to indicate some of the obstacles which present themselves to any attempts at placing generic nomenclature on a satisfactory basis, and, in conclusion, wish to allude to some difficulties in specific nomenclature with which the Rules of the British Association are insufficient to deal. An exception in favour of Artedi and Scopoli is made with regard to the date of the commencement of our nomenclature. But other authors besides these have adopted the Linnean arrangement; and it would appear that much less confusion would be created by making no exceptions whatever, and fixing the date authoritatively at 1767, than by adopting an earlier edition of the 'Systema Naturæ' as our starting-point. It seems clear that we must either take the earliest or the latest works of Linnæus to begin with; and if we take the earliest, we are met by the difficulty that Linnæus himself changed the names of several of his own species in his different works. To admit the claims of any author previous to the year 1767 would simply be to introduce an element of additional and very serious confusion into our

already sufficiently confused synonymy. An appeal to an author older than Linnæus may be useful to fix a species; but the danger of making any exceptions to the rigid limit of 1767 in adopting specific names is so great, that it appears most desirable to refuse the claims of all previous authors. In a few cases, however, they may be admitted without danger. For example, Clerck figured a *Papilio hylas* in 1764, not noticed by Linnæus. Hübner and Godart figured and described another species under that name, which they mistook for *Hylas*, Clerck. Westwood restores the name *Hylas* to Clerck's insect, and gives a new name to the other species. Still it is doubtful whether it would not have been better to rename Clerck's insect, rather than to admit the claims of an author previous to 1767.

It is uncertain whether names published without characters, subsequently to 1767, but referring to figures or descriptions published previously to that year, and which are sufficient to fix the species, ought to be accepted; but there is no reason why they should not. For instance, Rottemburg, in 1775, applied names to several species recognizably described without scientific names by Geoffroy in 1762. There seems no reason why these names should not claim priority over subsequent descriptions; but I am not aware that the point has ever been discussed, although these names of Rottemburg's are now accepted by the German entomologists.

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On the occurrence of *Astraptor illuminator*, Murray, or a closely allied insect, near Buenos Ayres. By ROLAND TRIMEN, Mem. Ent. Soc. Lond. (Communicated by HENRY TRIMEN, M.B., F.L.S.)

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IN 'The Journal of the Linnean Society,' vol. x. No. 42, there appeared an interesting paper, by Mr. Andrew Murray, on an undescribed light-giving Coleopterous larva, provisionally named *Astraptor illuminator*, which was found near Rio de Janeiro.

On perusing the account (p. 77) of the larva's appearance when alive, I was immediately reminded of the description of a "caterpillar" given to me a few years ago by the Rev. Canon Ogilvie, Principal of the Diocesan College near Cape Town. Mr. Ogilvie, for some time before coming to the Cape, resided